

The older or central site will also need considerable enlargement, and fresh buildings should rise there. Half a million may be set aside for ultimate building and equipment on and near the Mason College site.

Four out of the five millions are thus accounted for; the fifth is intended for a real attempt at scientific research in all departments. A fund by which men could be sent to any part of the world: to study tropical diseases, or fisheries, or mining possibilities—to investigate either nascent industries or injured industries of any kind; a fund which could equip research laboratories at home, and could defray the expense of researches undertaken on a large or engineering scale, so as to bring in rapidly some practical results. At present there are men who perceive how many things could be reformed or improved, whether in purification of the atmosphere, or in novel modes of locomotion, or in many other ways; but they lack the means to demonstrate their plans or to try experiments. Manufacturers and Municipalities sometimes try experiment on a very extensive scale indeed—a really commercial scale—and in case of failure the resulting experience is over-dear. The endowment would not allow experiments on such a scale as that; considering the variety of subject, the amount available for each would permit of no extravagance. Some of the experiments undertaken would undoubtedly fail, yet the success of a few would far more than compensate for the failure of many, and the activity could not but conduce to progress.

The fund would have to provide, not only the necessary appliances and assistance, but it would endow fellowships for post graduate study, and would attract workers from many parts of the world, and certainly from the Colonies.

One Principal could not possibly supervise all the multifarious activities which we have thus supposed may some day be called into being. There would have to be a Research Principal (whatever he might be called), to organise and superintend the scientific and post graduate study; a Technical Director, in touch with all the technical departments; and an Educational or General Head, to supervise the general scheme of the College in all its various avenues to a degree, and to take a lead in whatever conducted to general culture.

If the scheme is lavish it represents lavishness in the right place. It is the kind of lavishness for which the nation is waiting—one of the few kinds of which hitherto it has been afraid.

“There is that scattereth but yet increaseth:  
There is that withholdeth more than is meet, but  
it tendeth to poverty.”

These lines refer not to individual wealth alone, but to National wealth also. We have failed to make the most hitherto of the brains and energy of our more able and specially-gifted youth, but have cramped them by the necessity of earning a living: a process wholesome enough for the individual, and right for 999 out of every thousand, but for the remaining one far less repaying to the Commonwealth than the special service which he could render, if set free and encouraged by suitable surroundings for a few years of research, following on a thorough educational preparation. Not all of these would justify their selection: nine-tenths of them even might do only moderately well; but the discoveries of the select tenth would be of incalculable value. The world has been wasteful of its genius hitherto. It thinks too facetiously that people exceptionally endowed will struggle to the front somehow. A few do, but a number do not; the conditions are not favourable; and the struggle for existence, though doubtless a stimulating training for the harder and sturdier virtues, is not the right atmosphere for the delicate plant called genius. Different kinds of treatment are suited to different characters, and the hot-house plant will not thrive in bracing arctic air.

From the Trust Deed with which Mr. Carnegie has endowed a research Institution at Washington with ten million dollars, I extract the following altogether admirable statement of “aims”:

“1.—To promote original research; paying great attention thereto, as one of the most important of all departments.

“2.—To discover the exceptional man in every department of study, whenever and wherever found, inside or outside of schools; and to enable him to make the work for which he seems specially designed his life work.

“6.—To ensure the prompt publication and distribution of the results of scientific investigation; a field considered highly important.

... “The chief purpose of the founder being to secure if possible for the United States of America leadership in the domain of discovery, and the utilisation of new forces for the benefit of man.”

### MUTUAL AID.

*Mutual Aid, a Factor of Evolution.* By P. Kropotkin. Pp. xix + 348. (London: Heinemann, 1902.)

THIS book is undeniably readable throughout. The author has a creed which he preaches with all the fervour of genuine conviction. He is anxious to make converts, but his zeal never leads him to forget fairness and courtesy. Those who disagree with him may learn much by studying the book.

The line of argument is, briefly, as follows. In the case of animals, there is very little evidence of any struggle for existence among members of the same species, though plants, beyond all doubt, jostle their own kin out of existence. Animals are, as a rule, banded together for mutual protection, and those that have the best organisation for mutual defence are those that thrive best. Such species are represented by large, often by countless, flocks. Those that are least sociable, such as the great carnivores, are far less vigorous, to judge by their small numbers, and barely hold their own. The term “struggle for existence” should not, therefore, be used in a literal sense, as if there were an unceasing internecine war between the members of the same species, a limited amount of food available and no individual able to dispel the cravings of hunger except by robbing his own kin and reducing them to starvation. So far from this, we see mutual aid almost everywhere. There is a struggle for existence, but only in a wide, a metaphorical, sense. There is at normal times plenty of food, and there is, therefore, no need for fighting among the members of a species. Rats are a painful exception, and the cries of distress that come from cellars tell of their fights and their cruelty.

Turning to men, we find that mutual aid is, or at any rate has been in the past, even more general than among animals. Among savages, mutual aid is the chief factor in evolution. The individual is never isolated, but is one of a clan. Among barbarians, we find the same tendency to sociability and cooperation, but historians, by dwelling exclusively on wars, have misrepresented the facts. When the clan broke up, men formed village communities. So unwilling were they to fight that they got soldiers to protect them, and in many cases became the slaves of their protectors. The risk of this led to the growth of the mediæval town; it was a union of several village communities for defence against marauders. Within the larger community of the town were smaller associations, the guilds. In these mediæval towns, the arts flourished to an extraordinary degree. Sometimes leagues of free cities were formed, and held their own against all enemies. But in time these little homes of freedom disappeared. The big centralised State arose and crushed out those smaller communities that existed for mutual help. Within the State has sprung up an individualistic civilisation, but even now there is an enormous amount of mutual help. There are benefit societies, cooperative associations, trades' unions.

Moreover, the poor have the habit of constantly helping one another in all their troubles.

In every line of the book you see the eagerness of the writer to make the lives of men happier. So zealous is he that he attributes to the lower animals a benevolence similar to his own. But has he correctly represented the struggle for existence? It is true that he partly succeeds in making good his first contention, that there is not much evidence of a fratricidal struggle between members of the same species. Still, there is a great deal more than he would have us imagine. Rats, he owns, are sad offenders. Can we be sure that the same spirit does not show itself among other animals when a crisis comes? And crises, though Prince Kropotkin does not allow it, are all-important from the point of view of natural selection. Do not cattle in time of drought trample each other to death in their efforts to get what water remains in a pool here and there? Do they not, even in normal times, prod with their horns and bully a weakly member of the herd? Mr. W. H. Hudson, a most unwilling witness, testifies to this. Even maternal affection is strictly subordinated to the needs of the species. I have recently heard of a well-authenticated instance of a kid which was being gored to death by its mother because it was weakly, and it was only saved by being removed from her. Pigeons are very affectionate towards their young, but as soon as the young are able to fend for themselves, the affection comes suddenly to an end, and is often succeeded by a strong tendency to tease and worry.

Prince Kropotkin tells of crabs that worked hard and long to put one of their kind, that had got overturned, right side uppermost. This is indeed a remarkable phenomenon, hard to parallel even among animals a great deal higher than crabs. Swans will drive their young away from their pond. Eagles will not tolerate rivals within a certain radius of their nest. Besides this, there is sexual selection, which often takes the form of selection by battle. I have read Prince Kropotkin's book from cover to cover, and find no mention of the habit, so common among males, of fighting for supremacy. In the index there is no reference to it. Yet sexual selection is an important form of natural selection; its total omission is extraordinary.

Prince Kropotkin certainly succeeds in showing that mutual aid is very frequent among members of the same species. Probably Darwin underrated the amount. But it is because they have formidable enemies that they assist one another. In fact, the struggle for existence is all the keener because they are formed into troops or armies. Mutual aid cannot "eliminate competition" (p. 74). True, it dignifies and ennobles it, but it makes it more intense. Whatever vigour any species possesses results from competition. If civilised men are stronger than barbarians, it is not because they suffer less from competition. The civilised races have gained their strength in the stress of the struggle for existence, and they retain much of it because there is still a struggle against cold, want and disease. The struggle against physical conditions is the only one that Prince Kropotkin recognises as normal and natural. As for lions and tigers, he deprecates their existence; in his eyes, they have no

*raison d'être*. Yet they may claim the credit of having developed the habit of mutual aid among the ruminants. What need for mutual defence if there are no enemies? Birds of prey in the same way have fostered cooperation among the members of the species on which they make their raids.

As to the comparatively small numbers of the carnivorous animals, we need not attribute this, as our author does, to their want of cooperation. It is a question of food supply. Plants are more abundant than animals because they live on inorganic food, and that is plentiful. All animals require protoplasm that has been prepared for them by vegetables. This introduces a limitation of the food supply. The flesh-eaters must have it still further prepared by the vegetable feeders. Were there yet another class of animals that could subsist only on the flesh of carnivores, they would be still fewer in number than the class on which they preyed. Prince Kropotkin seems unaware of the influence of one species upon another. The keen eye of the falcon and his splendid swoop have necessitated counter developments in the species among which he seeks for his victims. Mere physical conditions, seldom changing, would never have brought about the evolution of the noblest forms of life. This could only be achieved through the interaction of competing species. The advance of one—the gain of keener sight, of greater speed or greater courage—has necessitated a corresponding advance in others.

Prince Kropotkin's failure to grasp this prevents him from understanding the growth of civilisation. His creed does not allow him to understand that the clan, the village community, the mediæval city, all derived their vitality from the fact that they had enemies to contend against. War necessitates loyalty and cooperation, as our author, at least in one passage, owns, and yet he will not allow that it has played any good part in evolution. The passive friendliness of all law-abiding citizens towards one another and the efficiency of the police prevent cooperation from being what it once was. It is only the largest cooperative association, the State, that can evoke enthusiastic loyalty and devotion, and this is, obviously, because nations have not yet done with war. If the law did not prevent active hostilities between trading associations, we should soon see institutions similar to the mediæval cities arising. Moreover, our philanthropic principles hinder us from bringing that pressure to bear upon the idle and corrupt which was essential to the successful working of the old guilds. Prince Kropotkin tells us that "the craft organisation required, of course, a close supervision of the craftsmen by the guild." An idle member might be ejected, and his fate would, probably, be far worse than that of the modern idler who tramps from workhouse to workhouse. It is not in benevolence we fail so much as in the sternness that is wanted for the proper treatment of the dregs of society. There are many persons whom society can only help by compelling them to help themselves. And such drastic measures Prince Kropotkin does not seem to recommend. He would abolish individualism. But how would he make the loafers, who will not work for themselves, bestir themselves on behalf of an association?

F. W. H.